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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,366	03/30/2001	D. Amnon Silverstein	10002452-1	7620

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EXAMINER

GENCO, BRIAN C

ART UNIT	PAPER NUMBER
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2615

DATE MAILED: 05/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/823,366

Applicant(s)

SILVERSTEIN, D. AMNON

Examiner

Brian C. Genco

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Applicant's arguments filed February 22, 2005 have been fully considered but they are not persuasive.

Applicant's arguments with regards to the drawing objection in the previous Office Action are deemed persuasive. As such, the objection to the drawings is herein withdrawn.

Applicant argues that Sorek teaches away from removing the marks by reducing the contrast of the projected light so that the marks are less visible.

In response, Examiner respectfully disagrees. There is no teaching in Sorek that one should not remove the marks and as such there is no teaching away from removing the marks. Examiner respectfully requests a page and paragraph of Sorek be identified where Sorek discloses that the illumination marks should not be removed.

With regards to the paragraph already identified by Applicant, the Examiner respectfully disagrees with the interpretation of this section. Applicant indicates that it is Sorek's desire to reduce the contrast so that the marks are less visible. First, Examiner notes that Sorek does not disclose to reduce the contrast, rather Sorek discloses to increase the contrast, i.e., focus the marks on the surface they are projected on as discussed in paragraphs 0100-0103. Sorek does disclose to reduce the intensity of the projected marks when there is a high contrast between the markers and the object they are projected on or when the ambient environment is relatively dark. One skilled in the art would clearly recognize that this is because in the above mentioned cases it would be easier to detect the marks as opposed other cases not mentioned above. Furthermore, Sorek discloses in paragraph 0102 that controlling the light intensity according to the focused

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distance enables power consumption to be reduced. As such, in reducing the intensity of the projected marks Sorek is attempting to reduce power requirements, not hide the marks or make them less visible as suggested by Applicant.

Applicant argues that Ford does not disclose projecting and then removing illumination marks by substituting estimated pixel values for the detected illumination mark pixel values.

In response, Examiner notes that Ford was not relied upon to teach projecting illumination marks. Rather, Ford was relied upon to teach removing large defects in an image by substituting estimated pixel values for the detected illumination mark pixel values, wherein the combination of references as a whole teach the limitations of projecting and then removing illumination marks by substituting estimated pixel values for the detected illumination mark pixel values.

Applicant argues that intentionally projected illumination marks have different characteristics than unintentional defect region and as such the detection and substitution techniques claimed and that of Ford are inherently different.

In response, Examiner respectfully disagrees. Examiner notes that arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965). Applicant has provided no evidence or reasoning why intentionally projected illumination marks have different characteristics than unintentional defect region and what particular characteristics are different. Further, even if intentionally projected illumination marks have different characteristics than unintentional defect region Applicant has provided no evidence or reasoning why the detection and substitution techniques of the claimed invention and

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Ford are inherently different as alleged by Applicant. Examiner notes that Ford was only relied upon to teach the limitation of substituting estimated pixel values for the detected defective pixel values, the estimated pixel values being determined using neighboring non-defective pixel values, wherein the substitution technique disclosed by Ford meets the claim limitations and as such cannot be inherently different as alleged by Applicant. Furthermore, Ford was not relied upon to detect the illumination marks, merely to correct their location. However, even if Ford was relied upon to detect the illumination marks, Examiner notes that the method for detecting defective pixels in paragraph 20 of page 2 would provide sufficient teaching for detecting defective pixel locations such as the illumination marks disclosed by Sorek.

Applicant argues that both Sorek and Ford teach away from combining the references, wherein Sorek teaches away by finding an alternate solution to hiding the illumination marks by reducing their intensity and Ford teaches away since Ford is only concerned with defects and does not suggest the concept of illumination marks.

In response, similar to that above, Applicant has shown no evidence of the references teaching away. Examiner notes that there is no disclosure in Sorek of reducing the intensity of the illumination marks so as to hide them. This reduction in intensity is to reduce power under certain circumstances wherein it is easier to detect the illumination marks. Further, even if the intensity was reduced to hide the illumination marks there would still be some pixels on the image that are defective since they are used to detect the geography of the scene and not the contents of the scene. As such, there would still be a need to remove those defects. With regards to Ford, Applicant is attempting to differentiate between the illumination marks and defective

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pixels. Examiner asserts that there is no difference between them. As noted above, the illumination mark pixels of Sorek are used to defective because they detect the geography of the scene and not the contents of the scene. Further, Examiner notes that in describing the prior art illustrated in Figs. 1 and 2, Applicant has admitted that it is already known that the projected illumination marks are considered to be defective pixel regions.

So as to summarize Examiner's position, Examiner notes that Sorek discloses to project illumination marks on an object so as to determine its geography with respect to the camera and to correct the distortion. As noted in the previous Office Action it is inherent to the disclose of Sorek that the location of the illumination marks are detected so as to enable correction of distortion. As such, Sorek generates a map of where the illumination marks are located on the image. Ford discloses to remove defects in the image by producing a defect map and providing a correction algorithm to substitute estimated pixel values for the detected defective pixel values, the estimated pixel values being determined using neighboring non-defective pixel values in order to correct defective regions resulting in an improved image that is more pleasing to a user. Examiner notes that pixels comprising data for the projection marks of Sorek are defective since they do not contain information about contents of the scene, merely the geography. As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used Ford's defect removal technique in Sorek's image containing the defective pixel illumination marks in order to provide an improved image that is more pleasing to a user.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over (US PG-PUB 2001/0041073 to Sorek et al.) in view of (US PG-PUB 2002/0071613 to Ford et al.).

Sorek discloses a method of reconstructing a digital image of an image on a surface using a digital image capture device arbitrarily positioned with respect to the surface, the method comprising the steps of:

projecting at least three illumination marks on the surface, said illumination marks having particular characteristic (e.g., Figs. 2-6; paragraph 0088);

capturing a single image of the surface to obtain captured image data (e.g., paragraph 0080);

detecting pixel values corresponding to the illumination marks and their corresponding location on the surface in the captured image data dependent on the particular characteristic (e.g.,

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paragraphs 0088-0094 wherein it is inherent in the disclosure that the illumination marks and their corresponding location on the surface in the captured image data are detected);

using the location of the illumination marks in the captured image data to correct for distortion of the image and the surface in the captured image data to generate undistorted image data (e.g., paragraph 0094).

Sorek does not disclose nor preclude substituting estimated pixel values for the detected illumination mark pixel values in the undistorted image data, the estimated pixel values being determined using neighboring non-illumination mark pixel values.

Ford discloses generating a defect map for an image and providing a correction algorithm to substitute estimated pixel values for the detected defective pixel values, the estimated pixel values being determined using neighboring non-defective pixel values in order to correct defective regions resulting in an improved image that is more pleasing to a user (paragraphs 0016, 0020, 0033, 0034). Examiner notes that Sorek implicitly generates a defect map through the identification of projection marks wherein pixels comprising data for the projection marks are defective since they do not contain information about contents of the scene, merely the geography.

Therefore it would have been obvious to one of ordinary skill in the art to have utilized Ford's large defect correction method for correcting the projection marks of Sorek by utilizing the defect map implicitly created by Sorek to identify the marks and utilize that defect map to estimate pixel values determined using neighboring non-defective, or non-illumination, pixel values in order to correct the large defective regions resulting in an improved image that is more pleasing to a user.

In regards to claim 2 Sorek discloses the method of claim 1 wherein the particular characteristic is the intensity level (e.g., paragraphs 0102-0103).

In regards to claim 3 Sorek discloses the method of claim 1 wherein the digital image capture device is a digital camera (e.g., paragraph 0080).

In regards to claim 4 Sorek discloses the method of claim 1 wherein the illumination marks are produced from an illumination source of a single color component having a particular intensity (e.g., paragraph 0104, lines 9-13).

In regards to claim 5 Sorek discloses the method of claim 4 wherein the single color illumination source is a laser (e.g., paragraph 0104, lines 9-13).

In regards to claim 6 Sorek discloses the method of claim 1 wherein the illumination marks are detected by detecting color component and intensity of the capture image data (e.g., paragraphs 0102-0104 wherein if intensity of the illumination marks is detected so as to reduce power consumption and further, if the beams are generated having a particular color then they are implicitly detected by detecting that particular color).

In regard to claim 7 Sorek discloses the method of claim 1 wherein the illumination marks are detected by detecting wavelength of the captured image data (e.g., see Examiners notes on claim 6 wherein detection of wavelength is detection of color).

In regards to claim 8 Sorek discloses the method of claim 1 wherein projecting the at least two illumination marks comprises projecting a grid of illumination marks (e.g., Figs. 4-6).

In regards to claim 9 Sorek discloses the method of claim 1 wherein the projecting the at least two illumination marks comprises projecting a single illumination source through a diffraction grating (e.g., Fig. 6; paragraph 0100).

In regards to claims 10-16 see Examiner's notes on the rejections above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian C. Genco who can be reached by phone at 571-272-7364 or by fax at 571-273-7364. The examiner can normally be reached on Monday thru Friday 8:30am to 4:30 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Groody can be reached at 571-272-7950. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the customer service office whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian C Genco
Examiner
Art Unit 2615

May 5, 2005


James J. Groody
Supervisory Patent Examiner
Art Unit 262